

NADIA

Human language system testing tool



NADIA improves the efficiency and effectiveness of the Verification and Validation (V&V) process for Real-time Embedded Critical Systems. It translates human readable Validation Test Procedures to executable scripts to be executed on systems-In-the-Loop (XIL) in order to run testing simulations.

From plain human language to executable script

```
1 dwell for [3<s>]
2 accelerate engine rotation to [2000<rpm>]
3 start engine
4 dwell for [5<s>]
5 accelerate engine rotation to [5000<rpm>]
6 dwell for [5<s>]
7 read and print value of [enginetemp]
8 ensure | [enginetemp] <= [100<degC>] |
9 dwell for [5<s>]
0

113 def runIt(self, maPort):
114     # #####
115     # Main content of VTP script
116     time.sleep(3)
117     maPort.Write(desiredrpm, self.Testbench.ValueFactory.CreateFloatValue(2000))
118     maPort.Write(enginepower, self.Testbench.ValueFactory.CreateBooleanValue(True))
119     time.sleep(5)
120     maPort.Write(desiredrpm, self.Testbench.ValueFactory.CreateFloatValue(5000))
121     time.sleep(5)
122     readValue = maPort.Read(enginetemp)
123     print "Value of '%s' is %s" % (enginetemp, readValue.Value)
124     if not (maPort.Read(enginetemp).Value <= 100):
125         exit("Procedure abort occurred caused by a condition that was not satisfied")
126     time.sleep(5)
127     # #####
128     # STOP execution
129     print 'Script execution completed !'
130
131
132 if __name__ == "__main__":
133     maPort = None
134
135     try:
136         example = NadiaScript()
137         maPort = example.CreatingAndConfiguringMAPort(maPortConfigFilePath, False, "MAPortExample")
138         example.runIt(maPort)
139
140     except TestbenchPortException as ex:
141         print "TestbenchPortException occurred:"
142         print "Code: %d" % (ex.Code)
143         print "CodeDescription: %s" % (ex.CodeDescription)
144         print "VendorCode: %d" % (ex.VendorCode)
145         print "VendorCodeDescription: %s" % (ex.VendorCodeDescription)
146         raise
147     except Exception as ex:
148         print "Exception occurred:"
149         print ex.message
150         raise
151     # finally:
152     #     # Free the allocated memory and any system resources of the MAPort instance
153     #     if maPort != None:
154     #         maPort.Dispose()
155     #         maPort = None
```

9 lines of English test procedure **PRODUCES 157 lines** of Python test script

NADIA was successfully deployed within the aerospace industry to support compliance with DO-178C.
NADIA won UbiMobility 2017: Business France and Bpifrance Accelerate 8 Innovative Startups and SMEs in the US Autonomous Vehicle Sector.
NADIA's readiness has been demonstrated for the automotive domain where Real-time Embedded Critical Systems verification and validation are required.